LESSON MAKER PRO

Where Graphs Meet

Use intersections to solve equations and compare quantities.

HIGH SCHOOL · A1P.AF.F

A1P.AF.F "Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given..."

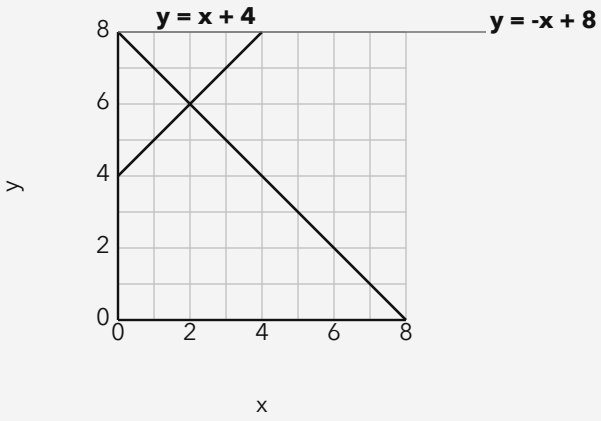
NAME _____ DATE _____

THE BIG IDEA

When two graphs meet, their x- and y-values are the same. Read each crossing as an ordered pair. If the graphs cross twice, there are two solutions.

WORKED EXAMPLE

Where do the two lines meet?



1. Find the point where the lines cross.
2. Read x = 2 and y = 6.

Answer: (2, 6)

PRACTICE 4 problems

1 Find where the graphs of y = x + 1 and y = -x + 7 meet.

ANSWER _____

2 Find where the graphs of y = 2x - 1 and y = -x + 8 meet.

ANSWER _____

3 Find where the graphs of y = 3x and y = x + 6 meet.

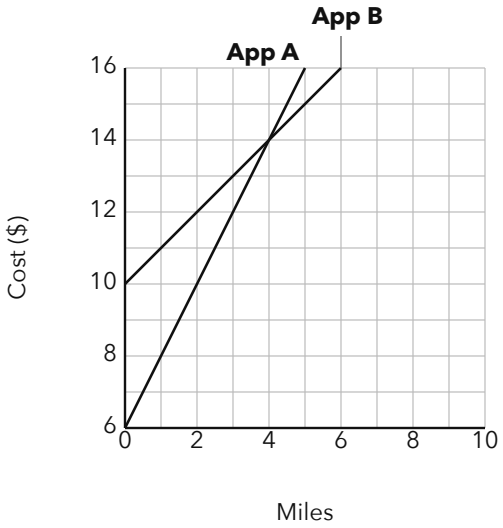
ANSWER _____

4 Find both points where the graphs of $y = x^2$ and y = x + 2 meet.

ANSWER _____

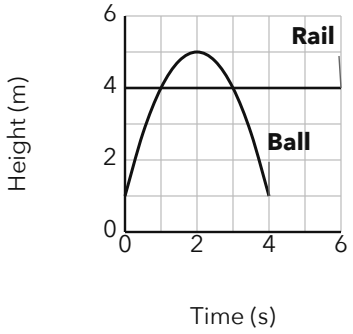
APPLY IT Show your work

1 Two rideshare apps charge the amounts shown. At what distance do they cost the same, and what is that cost?



ANSWER _____

2 A tossed ball and a balcony rail are shown. At what two times is the ball level with the rail?



ANSWER _____

CHALLENGE One step up

For which x-values is the graph of $y = x^2$ below the graph of $y = 9$? Explain using their crossings.

WORK SPACE AND ANSWER

ANSWER KEY

Where Graphs Meet

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find where the graphs of y = x + 1 and y = -x + 7 meet.	**(3, 4)**
2	Find where the graphs of y = 2x - 1 and y = -x + 8 meet.	**(3, 5)**
3	Find where the graphs of y = 3x and y = x + 6 meet.	**(3, 9)**
4	Find both points where the graphs of $y = x^2$ and y = x + 2 meet.	**(-1, 1) and (2, 4)**

PART 2 · APPLY IT

1. **4 miles; $14** The lines cross at (4, 14). The coordinates give the distance and cost.
2. **1 second and 3 seconds** The ball's curve crosses the rail's line at time values 1 and 3.

CHALLENGE

-3 < x < 3. The graphs cross at x = -3 and x = 3, and the parabola is below the line between those crossings.

Accept the two intersection points in either order. In the challenge, accept interval notation (-3, 3) with an explanation that excludes the crossings.